CLAIMS

1. An ignition device for internal combustion engine, containing:

- a main chamber (1) designed for including a main combustible mixture, and fitted with a compression system of said mixture,
- an igniter (11) containing a precombustion chamber (2) designed for receiving reactants and an ignition system (13,14) of the reactants contained in the precombustion chamber, said precombustion chamber (2) being defined by a precombustion chamber body (12) having a head (12a) including at least one passageway (15), said head (12a) of the precombustion chamber body separating the precombustion chamber (2) from the main chamber (1) and communicating the precombustion chamber (2) and the main chamber (1) by dint of the passageway(s) (15),

characterised in that said precombustion chamber body (12) is made of a material having a thermal conductivity at 20°C of at least 10 W/K/m.

2. An ignition device according to claim 1 characterised in that said precombustion chamber body (12) is made of a material having a thermal conductivity at 20°C of at least 30 W/K/m, preferably of at least 50 W/K/m.

3. An ignition device according to any of the previous claims characterised in that said precombustion chamber body (12) is made of a material having a thermal conductivity at 20 °C smaller than or equal to 350 W/K/m.

4. An ignition device according to any of the previous claims characterised in that the material forming said precombustion chamber body (12) is selected among the copper alloys.

5. An ignition device according to claim 4 characterised in that the material forming the precombustion chamber body according to the

invention is selected among binary brasses, copper-nickel, copper-aluminium and copper-nickel-zinc alloys.

6. An ignition device according to claim 5 characterised in that the material forming the precombustion chamber body according to the invention is selected among the alloys CuZn5, CuZn10, CuZn15, CuZn20, CuZn30, CuZn33, CuZn36, CuZn37, CuZn40, CuNi44Mn, CuNi5Fe, CuAl5, CuAl6, CuAl10Fe5Ni5, CuNi10Zn27, CuNi12Zn24, CuNi15Zn21, CuNi18Zn20, CuNi18Zn27, CuNi10Zn42Pb2 and CuNi18Zn19Pb1, preferably the alloy CuZn5.

7. An ignition device according to claim 4 characterised in that the material forming said precombustion chamber body (12) is CuCr1Zr.

8. An ignition device according to any of the previous claims characterised in that said passageway(s) (15) are of cylindrical shape and of diameter greater than 1 mm.

9. An ignition device according to any of the claims 1 to 7 characterised in that said passageway(s) (15) are capable of preventing the propagation of a flame front while enabling the propagation of unstable compounds derived from the combustion of the reactants contained in the precombustion chamber (2), the compression system of the main chamber (1) and the seeding of the main mixture with said unstable compounds enabling mass self-ignition of the main mixture.

10. An ignition device according to claim 9 characterised in that said passageway(s) (15) are of cylindrical shape and of diameter smaller than or equal to 1 mm.

11. An ignition device according to claim 9 or 10 characterised in that said passageway(s) (15) have a length smaller than or equal to the diameter thereof.

12. An ignition device according to claim 9, 10 or 11 characterised in that

- the upper section of the precombustion chamber body (12), not adjoining the main chamber, is in the form of a cylinder of inner diameter Φ, and

- the head of the precombustion chamber body comprises several passageways (15), said passageways being circumscribed by a circular curve of diameter d_2 running through the centres of the outermost passageways (15), the ratio d_2/Φ being smaller than or equal to 0.5.

13. An ignition device according to the previous claim characterised in that the ratio d_2/Φ is smaller than or equal to 1/3.

14. An ignition device according to claim 12 or 13 characterised in that the centre of the curve running through the centres of the outermost passageways (15) is situated on the axis symmetry (2b) of the precombustion chamber (2).

15. An ignition device according to claim 12 or 13 characterised in that the centre of the curve running through the centres of the outermost passageways is situated at a distance d_3 from the axis symmetry (2b) of the precombustion chamber (2), said distance d_3 being equal to or greater than the quarter diameter Φ of the precombustion chamber (2).

16. An igniter for internal combustion engine containing a precombustion chamber (2) defined by a precombustion chamber body (12) having a head (12a) fitted with at least one passageway (15), the precombustion chamber being designed for including a combustible mixture, and an ignition system (13,14) of the combustible mixture contained in the precombustion chamber (2), characterised in that the precombustion chamber body (2) is made of a material having a thermal conductivity greater than 10 W/K/m.

17. An igniter according to claim 16 characterised in that said precombustion chamber body (12) is made of a material having a thermal conductivity greater than 10 W/K/m, preferably greater than 30 W/K/m.

18. An igniter according to claim 16 or 17 characterised in that said precombustion chamber body (12) is made of a material having a thermal conductivity smaller than or equal to 350 W/K/m.

19. An igniter according to any of the claims 16 to 18 characterised in that the material forming said precombustion chamber body (12) is selected among the copper alloys.

20. An igniter according to claim 19 characterised in that the material forming said precombustion chamber body (12) is selected among the binary brasses, copper-nickel, copper-aluminium and copper-nickel-zinc alloys.

21. An igniter according to claim 20 characterised in that the material forming said precombustion chamber body (12) is selected among the alloys CuZn5, CuZn10, CuZn15, CuZn20, CuZn30, CuZn33, CuZn36, CuZn37, CuZn40, CuNi44Mn, CuNi5Fe, CuAl5, CuAl6, CuAl10Fe5Ni5, CuNi10Zn27, CuNi12Zn24, CuNi15Zn21, CuNi18Zn20, CuNi18Zn27, CuNi10Zn42Pb2 and CuNi18Zn19Pb1, preferably the alloy CuZn5.

22. An igniter according to claim 19 characterised in that the material forming said precombustion chamber body (12) is the alloy CuCr1Zr.